Amendments in the claims

1-31. (canceled)

32. (currently amended) A method for fabricating ~~an~~ a magnetoresistive (MR) sensor comprising:

a) depositing a bottom ~~resist~~ layer on a substrate, wherein the substrate is a magnetoresistive layer structure and the bottom ~~resist~~ layer comprises a first polymer;

b) depositing a top resist layer on the bottom ~~resist~~ layer, the top resist layer comprising a second polymer;

c) exposing the top resist layer to energetic particles in a bridge pattern defining a trackwidth of the MR sensor;

d) developing the exposed top resist layer with a second developer which substantially does not affect the bottom layer;

e) etching the bottom ~~resist~~ layer in a first developer to form a fully undercut resist bridge structure suspended above the substrate, wherein the resist bridge has a width narrower than 0.2 micron, and wherein the first developer substantially does not affect the top resist layer; and

f) ion beam milling the magnetoresistive layer structure to form the magnetoresistive sensor, wherein the magnetoresistive sensor has a trackwidth narrower than 0.2 microns~~.~~;

wherein a pattern is not formed in said bottom layer by exposure to said energetic particles or by exposure to other energetic particles.

33-34. (canceled)

35. (new) The method of claim 32, wherein the energetic particles are electrons or photons.

36. (new) The method of claim 32, wherein the thickness of the bottom layer is between 0.02 micron and 0.1 micron.

37. (new) The method of claim 32, wherein the first polymer comprises polymethyl glutarimide.

38. (new) The method of claim 37, wherein the first developer comprises a basic solution of NaOH or KOH.

39. (new) The method of claim 32, wherein the second polymer comprises an e-beam sensitive resist.

40. (new) The method of claim 39, wherein the second polymer comprises polymethyl methacrylate.

41. (new) The method of claim 40, wherein the second developer comprises isopropyl alcohol and water.

42. (new) The method of claim 32, wherein the second polymer comprises a deep ultraviolet resist.

43. (new) The method of claim 42, wherein the second developer comprises a basic solution of NaOH or KOH.

44. (new) The method of claim 32, wherein the thickness of the top resist layer is between 0.2 micron and 0.5 micron.

45. (new) The method of claim 32, wherein the magnetoresistive sensor has a trackwidth to thickness ratio of less than or equal to 4 to 1.

DETAILED ACTION:

Claim status:

Claims 1-31 and 33-34 are canceled. Claim 32 is currently amended. New claims 35-45 depend from claim 32.

Support for amendments to claim 32 is present in the specification. For example, "wherein a pattern is not formed in said bottom layer by exposure to said energetic particles or by exposure to other energetic particles" is supported by lines 25-26 of page 5 of the specification. In addition, "a second developer which substantially does not affect the bottom layer" is supported by line 11 of page 11 of the specification. Finally, "wherein the first developer substantially does not affect the top resist layer" is supported by lines 16-20 of page 11 of the specification.

Thus claim 32 as amended entails the patterning and developing of **only** the top resist layer, but not of the bottom layer (i.e., the bottom layer is not patterned by energetic particles). Furthermore, the first developer substantially does not affect the second polymer and the second developer substantially does not affect the first polymer. Thus the claimed "developing" and "etching" steps are **separate** processing steps, performed with first and second developers which are chemically distinct.

New claims 35-45 are supported by the specification and by the claims as originally filed. New claim 35 is supported by original claim 2. New claim 36 is supported by original claim 4. New claim 37 is supported by original claim 5. New claim 38 is supported by original claim 6. New claim 39 is supported by original claim 7. New claim 40 is supported by original claim 8. New claim 41 is supported by original claim 9. New claim 42 is supported by original claim 10. New claim 43 is supported by original claim 12. New claim 44 is supported by original claim 16. New claim 45 is supported by original claim 22.

paragraph 3: claim rejections under 35 USC 102

Claim 32 stands rejected under 35 USC 102(e) as anticipated by US 6,493,926, hereinafter Han.

With respect to claim 32, Han teaches a bilayer resist bridge process where the two layers are shaped in a single processing step, performed with a solution which both develops the pattern in the top layer and removes the bottom layer (column 5, lines 1-8). Thus Han does not teach or suggest the claimed limitation to "a second developer which substantially does not affect the bottom layer" Furthermore, Han does not teach or suggest the claimed limitation to "wherein the first developer substantially does not affect the top resist layer". Thus Han does not anticipate claim 32 as amended.

paragraph 4: claim rejections under 35 USC 103

Claims 28-30 and 32 stand rejected under 35 USC 103(a) over Han in view of the article "Chemistry of Ketal Resist System and its Lithographic Performance", hereinafter Huang.

Claims 28-30 are canceled. With respect to claim 32, Han in view of Huang does not teach or suggest the claimed limitation to "a second developer which substantially does not affect the bottom layer". Furthermore, Han in view of Huang does not teach or suggest the claimed limitation to "wherein the first developer substantially does not affect the top resist layer". Thus Han in view of Huang does not render claim 32 obvious.

paragraph 5: claim rejections under 35 USC 103

Claims 32-34 stand rejected under 35 USC 103(a) over Han in view of discussion of prior art in specification, hereinafter PA.

Claims 33 and 34 are canceled. With respect to claim 32, Han in view of PA does not teach or suggest the claimed limitation to "a second developer which substantially does not affect the bottom layer" Furthermore, Han in view of PA does not teach or suggest the claimed limitation to "wherein the first developer substantially does not affect the top resist layer". Thus Han in view of PA does not render claim 32 obvious.

paragraph 6: claim rejections under 35 USC 103

Claims 28-34 stand rejected under 35 USC 103(a) over Han in view of Huang in further view of PA.

Claims 28-31 and 33-34 are canceled. With respect to claim 32, Han in view of Huang in further view of PA does not teach or suggest the claimed limitation to "a second developer which substantially does not affect the bottom layer" Furthermore, Han in view of Huang in further view of PA does not teach or suggest the claimed limitation to "wherein the first developer substantially does not affect the top resist layer". Thus Han in view of Huang in further view of PA does not render claim 32 obvious.

paragraph 7: claim rejections under 35 USC 102/103

Claim 32 stands rejected under 35 USC 102(e) or alternatively under 35 USC 103(a) over US 6,187,513, hereinafter Katakura.

With respect to claim 32, Katakura teaches a bilayer resist bridge process where both the top layer and the bottom layer are patterned resists, as indicated throughout the reference, especially in the abstract and claims. Thus Katakura does not teach or suggest the claimed limitation to "wherein a pattern is not formed in said bottom layer by exposure to said energetic particles or by exposure to other energetic particles". Thus Katakura does not anticipate claim 32 as amended. Furthermore, it is not obvious to modify the method of Katakura to arrive at the limitations of claim 32, because such modification would fundamentally alter the method of Katakura.

paragraph 8: claim rejections under 35 USC 103

Claims 28, 30, and 32 stand rejected under 35 USC 103(a) over Katakura in view of Huang.

Claims 28 and 30 are canceled. With respect to claim 32, Katakura in view of Huang does not teach or suggest the claimed limitation to "wherein a pattern is not formed in said bottom layer by exposure to said energetic particles or by exposure to other energetic particles". Thus Katakura in view of Huang does not render claim 32 obvious.